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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/449,912	12/02/1999	NICK P. DIVITTORIO	202232	6873

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CHICAGO, IL 60601-6780

EXAMINER

TANG, KENNETH

ART UNIT	PAPER NUMBER
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2195

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/449,912

Applicant(s)

DIVITTORIO, NICK P.

Examiner

Kenneth Tang

Art Unit

2127

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is in response to the Request for Reconsideration filed on 6/18/04.
Applicant's arguments have been fully considered but are now moot in view of the new grounds of rejections.
2. Claims 1-26 are presented for examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-12 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:
 - a. In claim 1, "dynamic model-based interactive control" (line 2) is indefinite because there is no relationship or connection established of dynamic or interactive behavior in the rest of the claim.
 - b. In claim 1, "multivariable linear program" is indefinite because it is unclear whether or not this refers to the "dynamic model-based interactive control" in the preamble. No relationship or connection has been established between the two terms.
 - c. In claim 1, The term "relatively low" and "relatively high" in claim 1 is a relative term which renders the claim indefinite. The terms "relatively low" and "relatively high" are not defined by the claim, the specification does not provide a standard for

ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

d. In claims 2 and 14, “wherein the set of control blocks comprise supervisory control blocks” is indefinite because it is not made explicitly clear in the claim language whether this means it comprises supervisory control blocks as well as regulatory blocks (from claim 1) or if it comprises supervisory control blocks instead of regulatory blocks.

e. In claims 6 and 18, “PID” is indefinite and the acronym needs to be spelled out in the claims.

f. In claims 7 and 19, “ratio” is indefinite because it is not made explicitly clear in the claim language what the ratio is of. For example, what numerator divided by denominator results in this ratio? What does the ratio represent?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7, 13-19, and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant’s Admitted Prior art in the Specification (hereinafter AAPA) in view of Iino et al. (hereinafter Iino) (US 5,347,446), and further in view of Mann et al. (hereinafter Mann) (US 5,891,178).

Art Unit: 2127

5. As to claim 1, AAPA teaches a control processor for executing a set of control tasks defining interactive control of an industrial process (*page 3, lines 1-2*), the control processor comprising:

an embedded control task, performed within the control processor, the embedded control task comprising a program including a set of output values corresponding to process setpoints (*page 2, lines 5-23*);

a set of control blocks, performed within the control processor, the set of control blocks including regulatory control blocks having output values that are transmitted by the control processors to field devices coupled to the industrial process (*page 2, lines 5-23*).

6. AAPA fails to explicitly teach that the program be a multi-variable linear one. However, Iino teaches a control processor with a dynamic model based interactive control of an industrial process comprising a multivariable linear program. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the features of a control processor with a dynamic model based interactive control of an industrial process comprising a multivariable linear program to the existing control processor controlling an industrial process because this would optimize performance based on changing multiple variables (*col. 4, lines 64-68*).

7. AAPA and Iino fails to explicitly teach having a high and low execution priority status. However, Mann teaches a control processor interacting with a device higher wherein the control processor dynamically switches between multiple operating levels consisting of a background level (low priority) and a foreground level (higher priority). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Mann with AAPA and

Art Unit: 2127

Iino because this would increase the speed and efficiency of the shifting/switch of tasks in AAPA and Iino (*col. 10, lines 40-44 and 57-60*).

8. As to claims 2, AAPA teaches wherein the set of control blocks comprise supervisory control blocks (*page 2, lines 5-23*).

9. As to claim 3, AAPA in view of Iino teaches wherein the supervisory control blocks include a multivariable control block including computer instructions facilitating communication between the control processor and a workstation (*see rejection of claims 1 and 2*). In addition, Mann teaches downloading data between the control processor and device (*col. 13, lines 16-17*).

10. As to claim 4, AAPA in view of Iino teaches wherein the multivariable control block includes a process control model to be implemented by the embedded control task (*see rejection of claim 1*). Mann teaches downloading program instruction data between the control processor and device (*col. 13, lines 16-17*).

11. As to claims 5, AAPA in view of Iino teaches wherein the supervisory control blocks include at least one multivariable loop block, and further comprising the step of execution of instructions and data associated with the at least one multivariable loop block (*see rejections of claims 1 and 2*). AAPA teaches providing in put value for a regulatory control block via a user interface (*page 3, lines 1-2*).

Art Unit: 2127

12. As to claim 6, AAPA teaches wherein regulatory control block is a PID block (*page 2, lines 5-23*).

13. As to claims 7 AAPA, Iino teaches wherein the regulatory control block is a ratio block. However, it is well known in the art that control blocks can take on ratio values. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of the control block being a ratio block because this increases the functionality by being able to use ratio values as well as non-ratio values.

14. As to claims 13-19, they are rejected for the same reasons as stated in the rejections of claims 1-7, respectively.

15. As to claims 25, it is rejected for the same reasons as stated in the rejection of claim 1.

16. As to claims 26, it is rejected for the same reasons as stated in the rejection of claim 1. In addition, Mann teaches temporarily halting a background routine so that a foreground routine can be executed (*col. 10, lines 26-31*).

17. Claims 8-12 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior art in the Specification (hereinafter AAPA) in view of Iino et al. (hereinafter Iino) (US 5,347,446), further in view of Mann et al. (hereinafter

Art Unit: 2127

Mann) (US 5,891,178), and further in view of Messih et al. (hereinafter Messih) (US 5,526,794).

18. As to claims 8-12, AAPA, Ilino and Mann teach wherein the set of control blocks includes a supervisory control block including a sequence of instructions/tasks. AAPA, Ilino and Mann fails to explicitly teach a re-commencing cycle of the embedded task in accordance with a value specified by a repetition cycle parameter having a period, wherein the period specified by the repetition cycle parameter exceeds a period specified by the block processing cycle parameter. However, Messih teaches background and foreground execution in a controller wherein there is a time period (when period exceeds the period of completion of the foreground routine) before a cycle is restarted. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Messih to the existing system because this allows for optimization of speed (increasing) and the necessary amount of time (decreasing) (*col. 4, lines 7-19*).

19. As to claims 20-24, they are rejected for the same reasons as stated in the rejections of claims 8-12, respectively.

Response to Arguments

20. Applicant's arguments have been fully considered but are now moot in view of the new grounds of rejections.

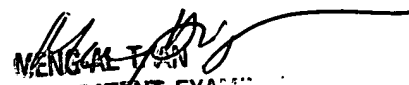
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Tang whose telephone number is (571) 272-3772. The examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kt
3/12/05


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SUPERVISORY PATENT EXAMINER
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